

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Claims 1-26 (canceled)

27. (Currently amended) A tag comprising an integrated circuit that includes:
a first antenna that receives an electromagnetic wave;
a signal receiving system that receives and stores input data derived from the wave;
a separate power storage component that receives and stores sufficient energy to power the integrated circuit;
a data processing system that produces output data from the input data; and
a second antenna that transmits at least a portion of the output data externally to the tag.
28. (Currently amended) A tag comprising an integrated circuit that includes:
~~a first~~ an antenna that receives an electromagnetic wave;
a separate power storage component that receives and stores sufficient energy to power the integrated circuit;
a data processing system that produces output data; and
electronics that transmits at least a portion of the output data externally to the tag.
- 29 - 31. (Canceled)
32. (Canceled)
33. (Currently amended) The tag of claim 27, wherein the wave has a wavelength within a spectrum of the wavelengths from radio waves to ultraviolet light, inclusive.
34. (Currently amended) The tag of claim 27, further comprising a memory section that stores at least ~~one~~ a portion of the input data and at least a portion of the output data.
35. (Previously presented) The tag of claim 34, wherein the memory section is nonvolatile.

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36. (Currently amended) The tag of claim 27, further comprising a multiplexer that controls a flow of the input data.
37. (Previously presented) The tag of claim 27, further comprising a pulse generating circuit.
38. (Previously presented) The tag of claim 27, wherein the input data is in analog form.
39. (Previously presented) The tag of claim 27, wherein the input data is in digital form.
40. (Previously presented) The tag of claim 27, wherein the output data is in analog form.
41. (Previously presented) The tag of claim 27, wherein the output data is in digital form.
42. (Previously presented) The tag of claim 27, further comprising a clock generator circuit.
43. (Previously presented) The tag of claim 27, further comprising a shift register circuit.
44. (Previously presented) The tag of claim 27, wherein the second antenna is a backscatter type antenna.
45. (Currently amended) The tag of claim 27, wherein the integrated circuit is built onto material that includes a composition selected from the group consisting of silicone, germanium, GaAs, sapphire, and diamond.
46. (Previously presented) The tag of claim 27, further comprising test and monitoring points and pads.
47. (Previously presented) The tag of claim 27, further comprising a test and monitoring control circuitry.
48. (Currently amended) The tag of claim 27, further comprising circuits selected from a group of circuits including for logic, sequencing and switching.
49. (Previously presented) The tag of claim 28, wherein the wave has a wavelength within a spectrum of the wavelengths from radio waves to ultraviolet light.

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50. (Previously presented) The tag of claim 27, wherein the first antenna comprises a dipole antenna.

51. (Currently amended) The tag of claim 27, wherein the second antenna comprises a dipole antenna ~~both first and second antennas comprise dipole antennas.~~

52. (Previously presented) The tag of claim 51, wherein the second antenna is powered entirely by the energy stored by the power storage component.

53. (Canceled)

54. (Currently amended) The tag of claim 28, further comprising a memory section that stores at least a portion of the output data.

55. (Previously presented) The tag of claim 54, wherein the memory section is a nonvolatile memory.

56. (Currently amended) The tag of claim 28, further comprising a multiplexer that controls a flow of the output data

57. (Currently amended) The tag of claim 28, further comprising a pulse generating circuit is used.

58. (Currently amended) The tag of claim 28, further comprising a circuit ~~circuitry~~ that receives input data in analog form.

59. (Currently amended) The tag of claim 58 28, wherein the input data is in digital form.

60. (Previously presented) The tag of claim 28, wherein the output data is in analog form.

61. (Previously presented) The tag of claim 28, wherein the output data is in digital form.

62. (Previously presented) The tag of claim 28, further comprising a clock generator circuit.

63. (Previously presented) The tag of claim 28, further comprising a shift register circuit.

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64. (Previously presented) The tag of claim 51, wherein the second antenna is a backscatter type antenna.

65. (Currently amended) The tag of claim 28, wherein the integrated circuit is built onto ~~different materials~~ a substrate that includes a material selected from the group consisting of silicone, germanium, GaAs, sapphire, and ~~or~~ diamond.

66. (Previously presented) The tag of claim 28, further comprising test and monitoring points and pads.

67. (Previously presented) The tag of claim 28, further comprising test and monitoring control circuitry.

68. (Currently amended) The tag of claim 28, further comprising circuits selected from a group of circuits including ~~for~~ logic, sequencing and switching.

69. (Previously presented) The tag according to claim 27, wherein the first antenna is tuned to a frequency from radio waves to ultra violet, inclusive.

70. (Previously presented) The tag according to claim 28, wherein the second antenna is tuned to a frequency from radio waves to ultra violet, inclusive.

71. (Currently amended) The tag of claim 27 wherein the integrated circuit is monolithic, the first antenna supplies power to both the integrated circuit and the second antenna, and further comprising a memory that stores at least a portion ~~one~~ of the input data and at least a portion of the output data.

72. (Currently amended) The tag of claim 28 wherein the integrated circuit is monolithic, the first antenna supplies power to ~~both the integrated circuit and the second antenna~~, and further comprising a memory that stores at least a portion ~~one~~ of the input data and at least a portion of the output data.

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73. (Currently amended) The tag of claim 27, further comprising a data processing system that processes the input data and produces to produce at least one of a decision and takes at least one an take action.

74. (Currently amended) The tag of claim 28, further comprising a data processing system that processes the input data and produces to produce at least one of a decision and takes at least one an take action.

75. (Currently amended) A ~~An electronic~~ tag comprising an integrated circuit that includes:
a ~~first~~ antenna that receives an electromagnetic wave ~~from an interrogator, and converts~~
~~the wave into electrical energy that charges a capacitor to supply power;~~
a signal receiving system ~~first antenna~~ that receives and stores an ~~input signal~~ containing
input data derived from the wave;
a separate power storage component that receives and stores sufficient energy to power
the integrated circuit ; and
electronics that transmits at least a portion of the input data externally to the tag.
~~an information processing circuit that utilizes the power to produce an output data;~~
~~a second antenna; and~~
~~a driver circuit that utilizes the second antenna to modulate and reflect the wave to send~~
~~the output data to a receiver.~~

76. (Currently amended) The tag of claim 75, wherein the wave has a wavelength within a spectrum of the wavelengths from radio waves to ultraviolet light tag is powered entirely by ~~electrical energy received by the first antenna.~~

77. (Currently amended) The tag of claim 75, wherein the ~~first~~ antenna comprises a dipole antenna.

78. (Currently amended) The tag of claim 75, wherein the ~~second~~ antenna comprises a loop ~~dipole~~ antenna.

79 (Currently amended) The tag of claim 75, further comprising a memory section that stores at least one a portion of the input data where the first and second antenna are positioned on opposite ends of the tag.

80. (Currently amended) The tag of claim 75, further comprising a tuning circuit that tunes the first antenna to receive the wave at a frequency selected from a range from of between radio waves to and ultraviolet, inclusive.

81. (Currently amended) The tag of claim ~~75~~ 79, wherein the memory section is nonvolatile further comprising a non-volatile memory that provides at least part of the output data.

82. (Currently amended) The tag of claim ~~27~~ 75, wherein the driver circuit drives the second antenna ~~as a~~ selected from a group including full wave, half-wave and or quarter-wave reflectors reflector.

83. (Currently amended) The tag of claim ~~75~~ 27, further comprising a multiplexer that controls a flow of the input data wherein the first antenna comprises a dipole antenna.

84. (Currently amended) The tag of claim ~~75~~ 27, further comprising a pulse generating circuit wherein the second antenna comprises a dipole antenna.

85. (Canceled)

86. (Canceled)

87. (Previously presented) The tag of claim 27, wherein the first and second antennas are a single antenna.

88. (Canceled)

89. (Canceled)

90. (New) The tag of claim 75, further comprising a circuit that receives input data in analog form.

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91. (New) The tag of claim 75, wherein the input data is in digital form.
92. (New) The tag of claim 75, wherein the output data is in analog form.
93. (New) The tag of claim 75, wherein the output data is in digital form.
94. (New) The tag of claim 75, further comprising a clock generator circuit.
95. (New) The tag of claim 75, further comprising a shift register circuit.
96. (New) The tag of claim 75, further comprising a data processing system that processes the input data and produces at least one decision and takes at least one action.
97. (New) The tag of claim 75, wherein the integrated circuit utilizes a substrate that includes a material selected from the group consisting of silicone, germanium, GaAs, sapphire and diamond.
98. (New) The tag of claim 75, further comprising test and monitoring points and pads.
99. (New) The tag of claim 75, further comprising test and monitoring control circuitry.
100. (New) The tag of claim 75, further comprising circuits selected from the group of circuits consisting of logic, sequencing, and switching circuits.
101. (New) The tag of claim 75, wherein the antenna comprises a single pole antenna.
102. (New) The tag of claim 27, wherein the first antenna comprises a loop antenna.
103. (New) The tag of claim 27, wherein the second antenna comprises a loop antenna.
104. (New) The tag of claim 27, wherein the first antenna comprises a single pole antenna.
105. (New) The tag of claim 27, wherein the second antenna comprises a single pole antenna.
106. (New) The tag of claim 28, wherein the antenna comprises a single pole antenna.
107. (New) The tag of claim 28, wherein the antenna comprises a loop antenna.

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108. (New) The tag of claim 28, wherein the antenna is a dipole type antenna.

109. (New) The tag of claim 108, wherein the antenna is a backscatter type antenna.

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